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Observations of Occultations of Stars by the Moon 1877–78, *and of Phenomena of Jupiter's Satellites* 1877, *made at the Radcliffe Observatory, Oxford.*

(*Communicated by E. J. Stone, M.A., F.R.S.*)

Occultations of Stars by the Moon.

Ref.	Day of Observation.	Phenomenon.	Moon's Limb.	Instrument.	Power.	G.M.T. of Observation. h m s	Observer.
(*a*)	1877, Jan. 30	Disapp. ρ Leonis	Bright	10-foot Equatorial	150	10 50 17·7	L.
		,,	,,	Heliometer	80	10 50 18·4	H.B.
(*b*)	30	Reapp. ρ Leonis	Dark	10-foot Equatorial	80	11 55 40·6	L.
(*c*)	Feb. 26	Disapp. Regulus	,,	,,	150	12 44 4·3	L.
(*d*)		,,	,,	Heliometer	80	12 44 2·9	Fd.B.
	26	Reapp. Regulus	Bright	10-foot Equatorial	150	13 49 43·6	L.
		,,	,,	Heliometer	80	13 49 43·5	Fd.B.
	Apr. 26	Disapp. 85 Virginis	Dark	10-foot Equatorial	150	11 59 33·5	L.
(*e*)	Aug. 23	Disapp. ∗ about 9 mag.	Eclipsed	,,	,,	9 45 1·2	L.
(*f*)		,, Lalande 43528 9	,,	,,	,,	10 29 40·3	L.
		,, ∗ about 9 mag.	,,	,,	,,	10 44 42·0 ±	L.
		,, ∗ ,, 8 ,,	,,	,,	,,	10 50 33·2	L.
		,, ∗ ,, 8 ,,	,,	,,	,,	10 53 27·8	L.
		,, ∗ ,, 9 ,,	,,	,,	,,	10 54 44·6	L.
		Reapp. ∗ ,, 10 ,,	,,	,,	,,	11 9 34·4	L.

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Occultations of Stars by the Moon.

Ref.	Day of Observation.	Phenomenon.	Moon's Limb.	Instrument.	Power.	G.M.T. of Observation. h m s	Observer.
	1877, Aug. 23	Reapp. ∗ about 9 mag.	Eclipsed	10-foot Equatorial	150	11 9 53·3 ±	L.
		Disapp. ∗ „ 9 „	„	„	„	11 21 2·9	L.
		Reapp. Lalande 43528–9	„	„	„	11 39 9·5 ±	L.
(*g*)	Nov. 20	Disapp. 16 Tauri	Bright	Heliometer	80	7 20 11·8	L.
		„ 17 „	„	„	„	7 21 21·6	L.
		„ 19 „	„	„	„	7 42 56·1	L.
		„ 20 „	„	„	„	7 49 41·5	L.
	1878, Feb. 15	„ ϵ Cancri	Imperfect	10-foot Equatorial	150	9 34 3·8	L.
(*h*)	Mar. 13	„ 52 Geminorum	Dark	„	„	10 27 19·3	L.
(*i*)	16	„ A Leonis	Imperfect	Heliometer	200	9 56 27·0	Fd.B.
(*k*)		„ „	„	10-foot Equatorial	150	9 56 26·9	L.
	16	Reapp. A Leonis	Bright	„	„	10 34 17·4	L.

Remarks.

(*a*) and (*b*) Instrument unsteady; windy.

(*c*) and (*d*) Instantaneous.

Aug. 23. These occultations observed during the eclipse of the Moon. Lal. 43528–9 noted as about mag. 7.

(*e*) " 10^s going out of sight."

(*f*) Seemed to hang on limb 3^s.

(*g*) The Moon full. All the stars became very faint at disappearance, 17 Tauri being less so than the others. Clouds were passing at the disappearance of 19 Tauri, but the observation is considered satisfactory. At $8^h\ 6^m\ 38^s \pm$ G.M.T., two smaller stars were occulted nearly in the same place as 20 Tauri, but they became so faint at disappearance that the *exact* time could not be noted, although that given must be within two seconds.

(*h*) Cloudy, but the observation satisfactory.

(*i*) and (*k*) Instantaneous.

In converting Oxford Mean Solar Times into Greenwich Mean Solar Times the following Longitude has been used, $5^m\ 2^s{\cdot}6$ W.

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Phenomena of Jupiter's Satellites.

Ref.	Day of Observation.	Satellite.	Phenomenon.	Instrument.	Power.	G.M.T. of Observation. h m s	G.M.T. of N.A. h m s	Obs.
	1877, June 20	I.	Tr. E. First contact	10-foot Equatorial	150	13 1 53		
			Bisection	,,	,,	13 3 58	13 6 0	Fd.B.
			Last contact	,,	,,	13 6 2		
(*a*)	July 5	I.	Oc. D. Bisection	Heliometer	200	11 37 13	11 38 0	Fd.B.
			Last contact	,,	,,	11 38 53		
(*b*)	7	III.	Oc. D. First contact	,,	,,	12 6 11		
			Bisection	,,	,,	12 9 10	12 10 0	Fd.B.
			Last contact	,,	,,	12 13 9		
	20	I.	Tr. I. Ext. contact	10-foot Equatorial	150	12 12 43	12 16 0	L.
			Int. contact	,,	,,	12 17 12		
	24	II.	Oc. D. First contact	,,	,,	11 7 4	11 11 0	L.
			Last contact	,,	,,	11 11 43		
(*c*)	26	II.	Tr. E. First contact	Heliometer	200	9 0 55		
			Bisection	,,	,,	9 4 54	9 3 0	Fd.B.
			Last contact	,,	,,	9 8 24		
	28	I.	Oc. D. First contact	,,	,,	11 18 51		
			Bisection	,,	,,	11 20 41	11 22 0	Fd.B.
			Last contact	,,	,,	11 22 40		

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Phenomena of Jupiter's Satellites.

Ref.	Day of Observation.	Satellite.	Phenomenon.	Instrument.	Power.	G.M.T. of Observation.	G.M.T. of N.A.	Obs.
						h m s	h m s	
	1877, July 30	I.	Ec. R. First seen	Heliometer	200	8 56 32	8 56 37	Fd.B.
			Full brightness	,,	,,	8 57 13	—	,,
	Aug. 5	III.	Ec. R. First seen	10-foot Equatorial	150	8 36 6	8 39 24	L.
			Full brightnes	,,	,,	8 42 5	—	,,
	12	III.	Ec. D. Began to fade	,,	,,	9 50 55	—	L.
			Disappearance	,,	,,	9 56 25	9 55 32	,,
	21	I.	Tr. I. First contact	,,	,,	8 22 37	8 25 0	L.
			Last contact	,,	,,	8 26 26		
	Sept. 7	I.	Ec. R. First seen	,,	,,	7 29 18	7 29 7	L.
			Full brightness	,,	,,	7 31 23	—	,,
	22	I.	Tr. E. First seen	Heliometer	200	7 16 31	7 14 0	Fd.B.
			Last contact	,,	,,	7 22 0		
	Oct. 5	II.	Tr. I. First contact	10-foot Equatorial	150	7 17 3	7 17 0	L.
			Last contact	,,	,,	7 22 32		
	16	I.	Ec. R. First seen	,,	,,	6 1 28	6 1 35	L.
			Full brightness	,,	,,	6 3 25	—	,,

Remarks.

(*a*) Planet ill-defined; observation unsatisfactory. (*b*) Images ill-defined and tremulous.
(*c*) Cloudy. Jupiter's image ill-defined; satellite unusually faint when near the planet. The shadow seen on the apparent lower belt.

Observers:—L. = Mr. Lucas. Fd.B. = Mr. Frederick Bellamy. H.B. = Mr. H. Bellamy.

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Observations of Occultations of Stars by the Moon, and of Phenomena of Jupiter's Satellites, made at the Radcliffe Observatory, Oxford, 1882–83.

(*Communicated by E. J. Stone, M.A., F.R.S.*)

Occultations of Stars by the Moon.

Ref.	Day of Observation.	Phenomenon.	Moon's Limb.	Instrument.	Power.	G.M.T. of Observation. h m s	Obs.
(*a*)	1882, Mar. 22	Disapp. 53 Arietis	Dark	42-inch telescope	80	10 10 43·6	R.
(*b*)	Apr. 1	Disapp. *e* Leonis	Bright	10-foot Equatorial	160	11 33 17·3	R.
(*c*)	May 29	Disapp. B.A.C. 4700	Dark	,,	160	13 1 27·1	R.
(*d*)	June 7	Reapp. κ Aquarii	,,	42-inch telescope	80	12 20 4·8	R.
(*e*)	Aug. 2	Reapp. 22 Piscium	,,	10-foot Equatorial	160	10 50 7·5	F.B.
(*f*)	Sept. 20	Disapp. μ Sagittarii	,,	,,	125	9 17 24·7	F.B.
	Oct. 24	Disapp. 51 Piscium	,,	,,	125	11 49 49·5	F.B.
(*g*)	1883, Feb. 15	Disapp. B.A.C. 1563	,,	Heliometer	200	10 2 22·3	W.
(*h*)		,,	,,	10-foot Equatorial	160	10 2 22·2	R.
(*i*)	16	Disapp. χ^2 Orionis	,,	Heliometer	200	5 58 45·8	W.
		,,	,,	10-foot Equatorial	160	5 58 45·8	R.
(*k*)		,,	,,	42-inch telescope	80	5 58 45·5	F.B.
(*l*)	Mar. 12	Disapp. *o* Arietis	,,	Heliometer	80	6 49 35·1	W.
(*m*)		,,	,,	10-foot Equatorial	160	6 49 35·3	R.
(*n*)		,,	,,	42-inch telescope	80	6 49 34·8	F.B.

Remarks.

(*a*) and (*d*) Star exceedingly faint; observation difficult; Moon very low. (*b*) Lost in glare at Moon's limb.
(*c*) Disappeared instantaneously; observation considered very good. (*e*) The time noted may be a very little late.
(*f*), (*g*), (*h*), and (*i*) Instantaneous. (*k*) and (*m*) Instantaneous; but chronometer beats faint, noise from bells, &c.
(*l*) Disappearance instantaneous. Images very steady. "Earth-shine" very distinctly showed markings on the Moon; the star appeared to touch the "Earth-shine" limb at least two seconds before its sudden disappearance.

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